

# Assemblers

A modular and reconfigurable manipulation system for autonomous in-space assembly

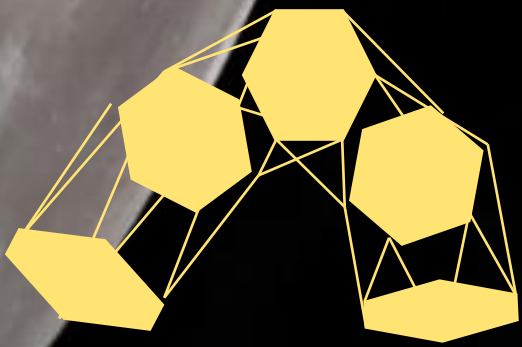


## Enabling Moon to Mars and Beyond

Supporting Artemis through pre-arrival infrastructure setup

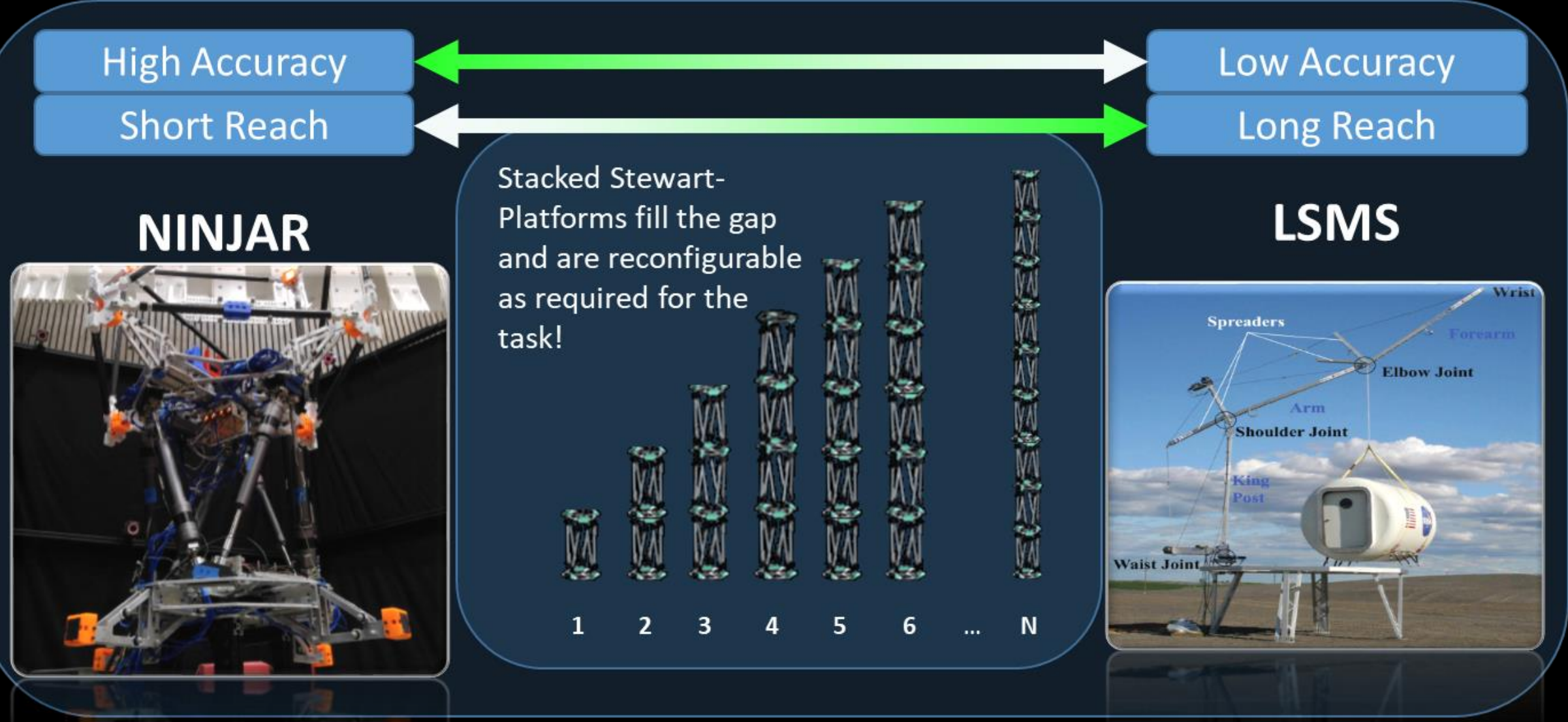
### What is it?

- Stacked Stewart platforms (SSPs)
- Configured to optimize individual tasks
- Detection and correction of assembly errors
- Demonstration

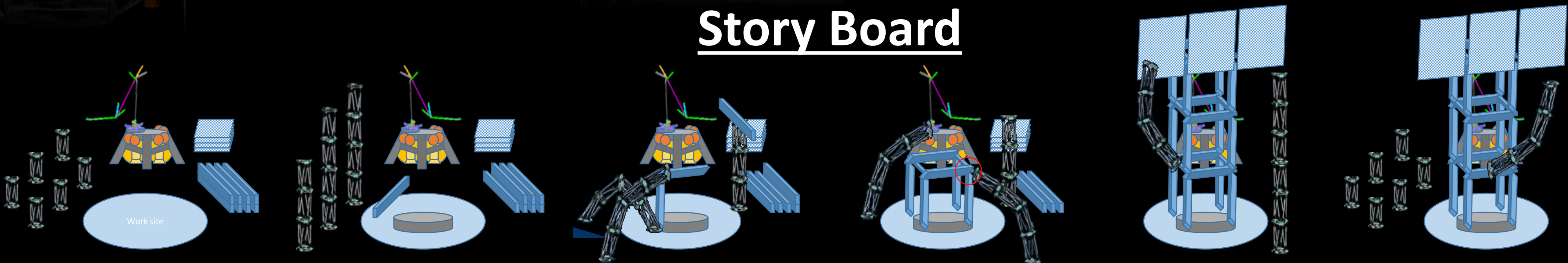


### So what?

- **Current practice:** Point designs
- **Assemblers approach:**
  - Development costs happen once
  - Tool box
  - Scalability
- **Autonomy:**
  - Facilitates optimal use of tools and enables un-crewed assembly operations
  - Supports pre-arrival infrastructure
  - High latency/extreme environments

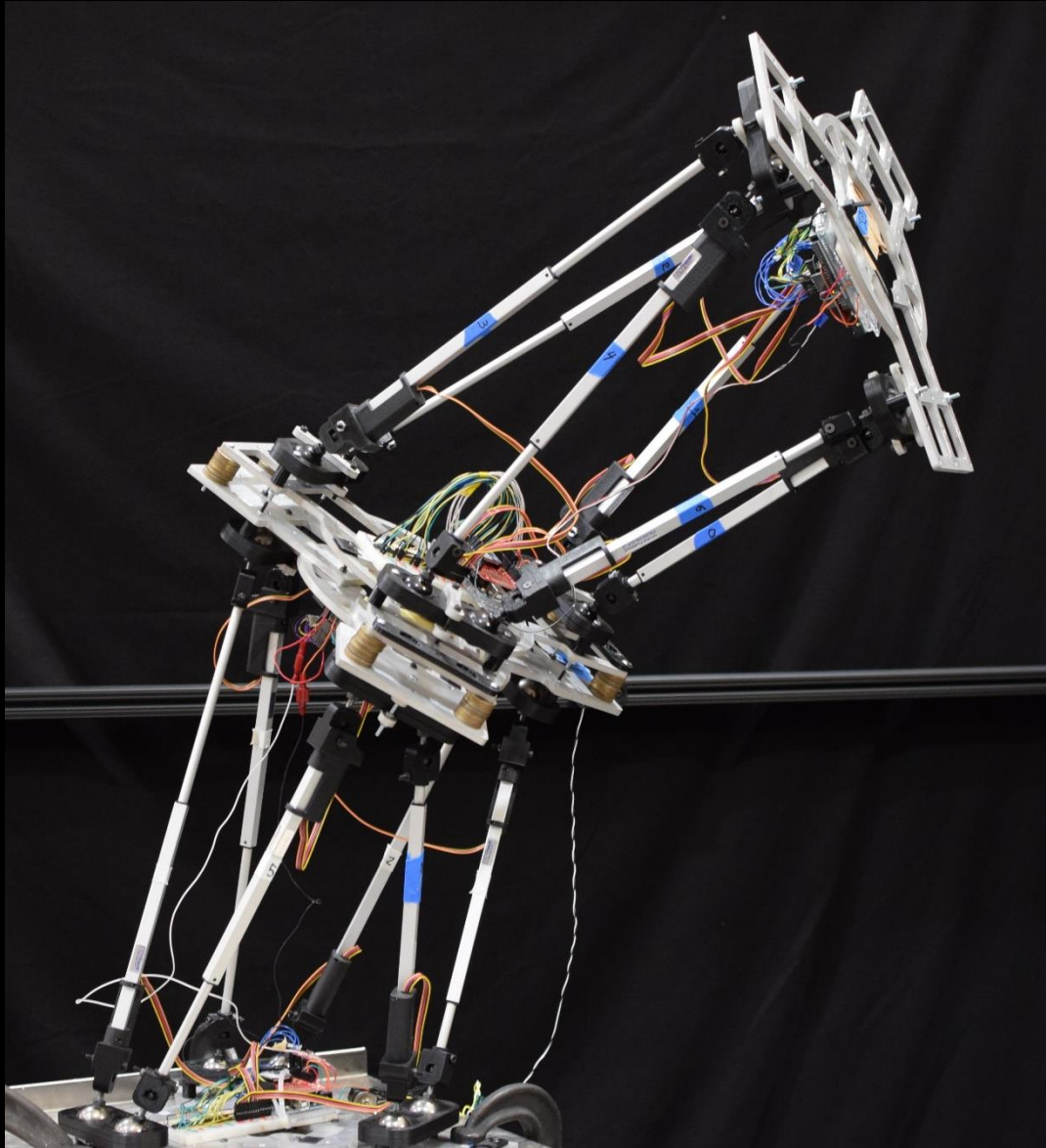


### Story Board

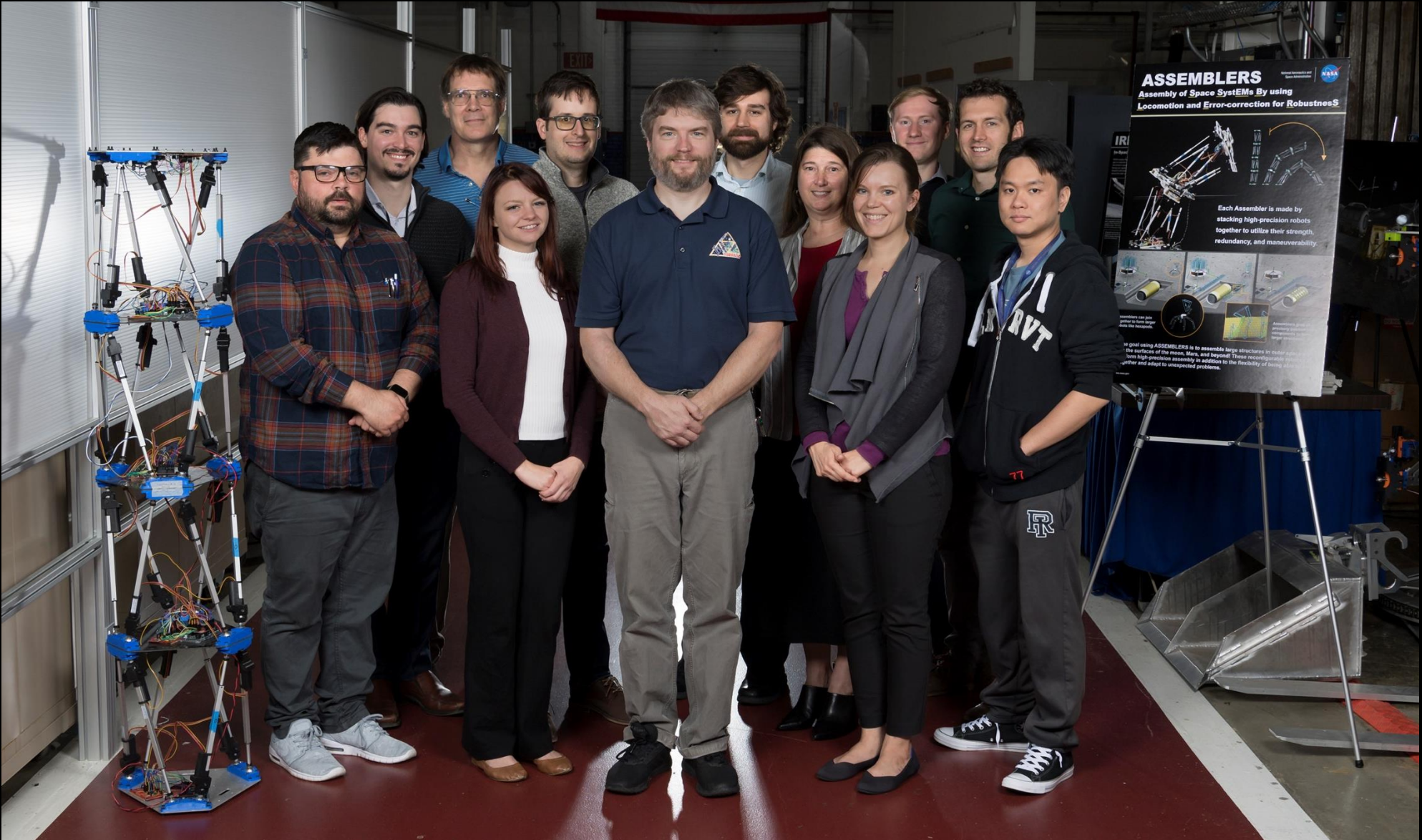


ACT – I: Work Site Preparation	ACT – II: Foundation Preparation	ACT – III: Structure Assembly	ACT – IV: Error Detection and Correction	ACT – V: Task Switching	ACT – VI: Assembly Completion and post Assembly Activities
<ul style="list-style-type: none"><li>• Work site preparation tasks allocated</li><li>• Material offloading</li><li>• Site inspection and preparation</li><li>• General staging</li></ul>	<ul style="list-style-type: none"><li>• Foundation preparation tasks allocated</li><li>• Assembler configuration</li><li>• Transport material to site</li><li>• Foundation setup</li><li>• Foundation inspection</li></ul>	<ul style="list-style-type: none"><li>• Structure assembly tasks allocated</li><li>• Component jiggling</li><li>• Component joining</li><li>• Assembly inspection</li></ul>	<ul style="list-style-type: none"><li>• Error detection</li><li>• Error correction</li><li>• Situation reports</li><li>• Resume planned assembly queue</li></ul>	<ul style="list-style-type: none"><li>• Next task allocated</li><li>• Next task execution</li><li>• Complete assembly inspection</li></ul>	<ul style="list-style-type: none"><li>• Validation reports</li><li>• Agent switch to maintain and support mode</li><li>• Other post-assembly task execution</li></ul>

### Early prototype



### The Team



### Multi-agent collaboration

